REMARKS

Claims 1-12, 14-23 and 25-33 are pending, claims 34-70 have been withdrawn, and claims 1, 3, 5, 9, 10, 14-20, 25 and 32 are amended herein.

Applicant thanks the Examiner and the Office for reviving the instant unintentionally-abandoned case. Applicant also thanks the Examiner for her rescindment of the objections to the Drawings and approval of the corrections thereof. Applicant further thanks the Examiner for rescinding the objections to the specification.

In the Action, the Examiner acknowledges and enters Applicant's September 10, 2004 facsimiled Response, but objects to same because of transmission artifacts on the received pages. Applicant has noted that many facsimiled communications to the Office have encountered the same problem. As per the Examiner's request, a clean copy of Applicant's September 10, 2004 Response submission is attached to this Response, as Exhibit A. In the September 10, 2004 Response, Applicant changed the title, added a cross-reference to a priority provisional, amended claims 1 and 19, and canceled claims 34-70. Applicant thanks the Examiner for her efforts to review the facsimiled Response, and entering the various amendments therein.

In the current Action, the Examiner objects to at least claims 1, 3, 9, 10 and 14-19 for various informalities, and enumerated various minor corrections to these claims, as amended and presented in Applicant's September 10, 2004 Response, to make them allowable. Applicant has carefully reviewed the pending claims and amended the claims accordingly, i.e., claims 1, 3, 9, 10, 14-20, 25 and 32 have been amended to better describe the invention and satisfy the Examiner's appreciated suggestion for positive recitation in the claims. To correct a typographical error, Applicant has revised claim 5 by substituting the article "a" with the article "an." As noted by the Examiner in the Action, with this positive recitation and correction of these and other informalities, the claims, as presently amended and presented herein, are allowable.

Applicant also thanks the Examiner for the reconsideration and withdrawal of her previous rejection of the claims in view of U.S. Patent No. 5,317,260 to Kasten et al. in view of Applicant's arguments in the September 10, 2004 Response and Interviews.

Claims 1-12, 14-23 and 25-33 do, however, stand rejected under the judicially-created doctrine of obviousness-type double patenting over claims in Applicant's and Assignee's U.S. Patent No. 6,801,037, which is a continuation of the instant application. As per the Examiner's request and recommendation, Applicant filed on September 20, 2005, a Terminal Disclaimer for the instant application, disclaiming potential term beyond that of the aforementioned issued patent. A copy of the Terminal Disclaimer is attached for the Examiner's convenience to this Response, as Exhibit B. Accordingly, Applicant respectfully requests that the obviousness-type double patenting rejection be reconsidered and withdrawn.

The prior art recently made of record but not applied by the Examiner appear no more relevant than Kasten et al. and the like previously cited.

Finally, Applicant again respectfully thanks the Examiner for her careful and thorough consideration of the case, and her many suggestions for obtaining allowance.

As per the Examiner's request and to facilitate allowance, Applicants enclose herein formal Drawings for the instant application (Exhibit C), the various red-ink changes to the Drawings having been approved by the Examiner.

Now that all of the informalities in the specification, Drawings and the claims have been corrected, Applicant believes the claims and the application to be patentable. The prompt issuance of a Notice of Allowance and Issue Fee Due is hereby earnestly solicited.

Should the Examiner feel that a telephonic or personal interview would be useful in facilitating any final issues for the allowance of this case, the Examiner is invited to contact Applicant's representative indicated below.

The Commissioner is authorized to charge any overage or shortage of fees connected with filing of this Amendment to Deposit Account No. 19-2380.

Respectfully submitted,

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Enclosures: Ex. A: Copy of Response of September 10, 2004 (10 pages)
Ex. B: Copy of Terminal Disclaimer of September 20, 2005 (2 pages)
Ex. C: Copy of formal drawings (30 pages)

RVD/plw:lms:mdd

EXHIBIT A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Applicant:	Guoping ZHANG	Examiner:	Fetzner, Tiffany
Serial No.:	09/852,033	Art Unit:	2859
Filed:	May 10, 2001	Confirmation No.: 7868
For:	DYNAMIC REAL-TIME MAGNETIC RESONANCE IMAGING SEQUENCE DESIGNER (as amended)		

AMENDMENT

Box Petition
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the December 10, 2003 Final Office Action and the Advisory Action of June 23, 2004, please review the following remarks related to the above-identified application.

AMENDMENT TO THE SPECIFICATION

On page 1, before the first line of the specification, please change the title to the following:

-- **DYNAMIC REAL-TIME MAGNETIC RESONANCE IMAGING SEQUENCE DESIGNER**

CROSS REFERENCE TO RELATED APPLICATIONS

This Application for Patent claims the benefit of priority from, and hereby incorporates by reference the entire disclosure of U.S. Provisional Application for Patent Serial No. 60/203,326, filed May 11, 2000. --

AMENDMENT TO THE CLAIMS

The following set of claims is presented in accordance with 37 C.F.R. 1.121 and by making this submission any claim not indicated as currently amended is asserted not to be changed relative to the immediate prior version of the claim. Please amend the claims as follows:

1.   (Currently Amended) A user interface operable to create, on a display device, a window for displaying a plurality of menu editor items for user selection, said menu editor items comprising:

a sequence editor item for creating a RF pulse sequence from at least one value; and

a sequence tailor editor item for user interaction with a graphical representation of a selected pulse sequence, wherein during said user interaction, the selected pulse sequence is graphically displayed to the user,

~~wherein~~ said user interaction ~~includes~~ including dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation of said selected pulse sequence [[, and]] that is currently undergoing user interaction with real time visual feedback of the interaction ~~to the user of~~ on the manipulated pulse sequence to the user, and

wherein said menu editor items further comprise a scan setting menu editor item for initiation of a magnetic resonance imaging scan.

2.   (Original) The user interface in accordance with claim 1, wherein said sequence tailor editor item is activated in response to user selection.

3.   (Original) The user interface in accordance with claim 1, wherein user selection of said sequence editor item activates a display of at least one sequence parameter for creating said pulse sequence, said at least one sequence parameter being operable to accept a default value.

4.   (Original) The user interface in accordance with claim 3, wherein said at least one sequence parameter is operable to accept a user entered value.

5. (Original) The user interface in accordance with claim 3, wherein said at least one sequence parameter is selected from the group consisting of: a gradient resolution parameter, a radio frequency pulse resolution parameter, a echo gathering time parameter, a sequence name parameter, at least one gradient motion compensation parameter, at least one radio frequency pulse characteristic parameter, and at least one data acquisition parameter.

6. (Original) The user interface in accordance with claim 3, wherein acceptance, by the user interface, of the at least one sequence parameter activates said sequence tailor editor item.

7. (Original) The user interface in accordance with claim 1, wherein activation of said sequence tailor editor item activates display of said pulse sequence and at least one control feature.

8. (Original) The user interface in accordance with claim 7, wherein said at least one control feature comprises at least one of a control section, a shape editor, a block editor, and a time scaler.

9. (Original) The user interface in accordance with claim 8, wherein said shape editor, when activated, is operable to modify at least one radio frequency pulse characteristic parameter and the radio frequency pulse shape associated with said selected pulse sequence.

10. (Original) The user interface in accordance with claim 8, wherein said time scaler, when activated, displays at least one vertical line through the graphically displayed selected pulse sequence for assisting the user in analysis of timing relations of the pulse sequence.

11. (Original) The user interface in accordance with claim 1, wherein said graphical representation within said window on said display device is divided into a plurality of portions.

12.　(Original) The user interface in accordance with claim 11, wherein said plurality of portions comprises at least one of a radio frequency pulse characteristics graph, a slice select gradient graph, a signal acquisition graph, and a phase encoding graph.

13.　(Canceled).

14.　(Original) The user interface in accordance with claim 13, wherein selection of said scan setting menu editor item displays at least one type of scan to perform.

15.　(Original) The user interface in accordance with claim 14, wherein said at least one type of scan comprises at least one scan selected from the group consisting of: a two dimensional scan, a combination scan, a three dimensional scan, a three dimensional combination scan, a two dimensional fast spin echo scan, and combinations thereof.

16.　(Original) The user interface in accordance with claim 14, wherein said type of scan, when activated, displays at least one setting imaging parameter, said setting imaging parameter being operable to accept at least one default value.

17.　(Original) The user interface in accordance with claim 16, wherein said at least one setting imaging parameter is operable to accept at least one user-entered value.

18.　(Original) The user interface in accordance with claim 16, wherein said at least one setting imaging parameter is selected from the group consisting of: a number of slices parameter, a slice thickness parameter, a sequence repetition parameter, a number of phase encoding levels parameter, a discrete Fourier transform size parameter, a polarity flipping parameter, and combinations thereof.

19.　(Currently Amended) A method for creation and customization of pulse sequences, said method comprising the steps of:

　　creating a window on a display device for displaying a plurality of menu editor items for user selection;

　　displaying a sequence editor item for creating a <u>RF</u> pulse sequence from at least one of user-entered values and default values;

displaying a sequence tailor editor item for user interaction with a graphical representation of a selected pulse sequence; and

displaying, graphically, said pulse sequence to the user,

~~wherein~~ said user interaction ~~includes~~ including dynamic, non-standard and on-the-fly manipulation of, and modification to, said graphical representation of said selected pulse sequence [[, and]] that is currently undergoing user interaction with real time visual feedback of the interaction ~~to the user of~~ on the manipulated pulse sequence to the user, and

wherein said method further comprising the steps of:

initiating a magnetic resonance imaging scan by activating a scan setting menu editor item within said window on said display device; and

displaying at least one setting imaging parameter.

20. (Original) The method in accordance with claim 19, wherein said creating step further comprises the step of:

displaying a scan setting menu editor item for initiation of a magnetic resonance imaging scan.

21. (Original) The method in accordance with claim 20, wherein, upon initiation of said magnetic resonance imaging scan, said method further comprises the step of:

initiating at least one of a two dimensional scan, a two dimensional combination scan, a three dimensional scan, a three dimensional combination scan, and a two dimensional fast spin echo scan.

22. (Original) The method in accordance with claim 19, further comprising the step of:

dividing said graphical representation within said window on said display device into a plurality of portions.

23. (Original) The method in accordance with claim 22, wherein said step of dividing further comprises the step of dividing said graphical representation into at least one of a radio frequency pulse characteristics graph, a slice select gradient graph, a signal acquisition graph, and a phase encoding graph.

24.   (Canceled).

25.   (Original) The method in accordance with claim 19, said method further comprising the steps of:

displaying, in response to selection of said sequence editor item, at least one sequence parameter for creating said pulse sequence; and

accepting, by said at least one sequence parameter, at least one of said default values.

26.   (Original) The method in accordance with claim 25, wherein said step of accepting further comprises the step of:

accepting, by said at least one sequence parameter, at least one of said user-entered values.

27.   (Original) The method in accordance with claim 26, wherein said step of displaying said at least one sequence parameter further comprises the step of:

displaying at least one additional parameter, said additional parameter selected from the group consisting of:

a gradient resolution parameter, a radio frequency pulse resolution parameter, an echo gathering time parameter, a sequence name parameter, a plurality of gradient motion compensation parameters, a plurality of radio frequency pulse parameters, and a plurality of data acquisition parameters.

28.   (Original) The method in accordance with claim 26, said method further comprising the step of:

activating said sequence tailor editor item by at least one of user selection and a response to said step of accepting of said at least one sequence parameter by a user interface.

29.   (Original) The method in accordance with claim 28, said method further comprising the step of:

displaying the selected one of said pulse sequences and at least one control feature for at least one of plot modification and plot enhancement.

30.   (Original) The method in accordance with claim 29, wherein said step of displaying further comprises the step of:

displaying at least one of a control section, a shape editor, a block editor, and a time scaler.

31.   (Original) The method in accordance with claim 30, wherein said step of displaying at least one of a control section, a shape editor, a block editor, and a time scaler further comprises the steps of:

activating said shape editor; and

modifying at least one of the radio frequency pulse characteristic parameters and the radio frequency pulse shape associated with said pulse sequence.

32.   (Original) The method in accordance with claim 30, wherein said step of displaying at least one of a control section, a shape editor, a block editor, and a time scaler further comprises the steps of:

activating said time scaler; and

displaying at least one vertical line through the graphically displayed pulse sequence for assisting the user in analysis of timing relations of the pulse sequence.

33.   (Original) The method in accordance with claim 30, wherein said step of displaying further comprises the step of :

displaying at least one of a number of slices parameter, a slice thickness parameter, a sequence repetition parameter, a number of phase encoding levels parameter, a discrete Fourier transform size parameter, and a polarity flipping parameter.

34 - 70. (Canceled)

REMARKS

The final Office Action of December 10, 2003 and Advisory Action of June 23, 04 have been received and carefully reviewed. Accordingly, the Applicants have amended claims 1 and 19 to further define the invention as discussed and agreed upon during the telephone interview of June 21, 2004, and claims 13, 24, 34-45 and 46-70 have been cancelled without prejudice or disclaimer. Claims 1-12, 14-23 and 25-33 remain pending. Applicant respectfully submits that no new matter has been introduced in this Amendment. Reconsideration and allowance of the claims in view of the amendments above and the remarks that follow is respectfully requested.

In the final Official Action, the Examiner rejected claims 1-33 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,317,260 to Kasten et al. (hereinafter "Kasten"). Applicant again respectfully traverses the Examiner's interpretation of Kasten.

With reference to the related case Serial No. 10/325,742, a divisional of the instant application, the Examiner had made several recommendations to place that case in condition for allowance, and has recently indeed allowed that case. Consistent with those prior recommendations, the current Advisory Action and the telephone interview of June 21st, the Applicant has amended claims 1 and 19 in a manner consistent with those recommendations.

As previously noted by the Applicant and agreed-to by the Examiner, Kasten fails to describe any dynamic, interactive and non-standard RF pulse sequence formation. Instead, all data entry, whether by user input or mouse, in Kasten creates at best concatenational combinations of standard sequences. In other words, Kasten represents a "canned" approach to magnetic image sequencing formation, readily distinguishable from the dynamic implementation of the present invention..
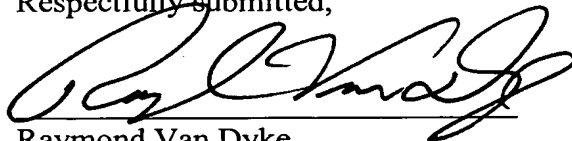
Claims 1 and 19 have been amended to better describe the dynamic interactiveness of the instant invention over the prior art, including the Kasten reference cited and applied in the Office Action, along with other newer references, such as Patent Application Publication Nos. 20020060566 and 20030002631, and U.S. Patent No. 6,484,048 mentioned during the interview by the Examiner in connection with the divisional case. Applicant has also reviewed the various references cited but not applied in the instant Office Action and respectfully submits that all of these newly-cited references are not relevant to the instant invention, or are obviated, as discussed below.

Particularly, on May 3, 2004, the U.S. Patent & Trademark Office granted Applicant's Petition, of February 10, 2004, to indicate the appropriate priority of the instant non-provisional application to the U.S. Provisional Patent Serial No. 60/203,326, filed on May 11, 2000, thereby pre-dating the earliest priority date of the two aforementioned Patent Application Publication documents. Therefore, the Applicant respectfully submits that all of the references brought to Applicant's attention by the Examiner are either irrelevant to the instantly claimed invention or have been rendered moot by the granting of the Petition. The provisional filing date is reflected in the Corrected Filing Receipt, and this date is also noted in the amendment to the specification submitted herewith.

In view of the above claim amendments and the proper indication of priority, Applicant respectfully requests that the Examiner reconsider and withdraw the § 102(b) rejection of the claims 1-33 over Kasten.

Having responded to the rejection set forth in the outstanding Office Action, it is submitted that claims are in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicant's undersigned representative.
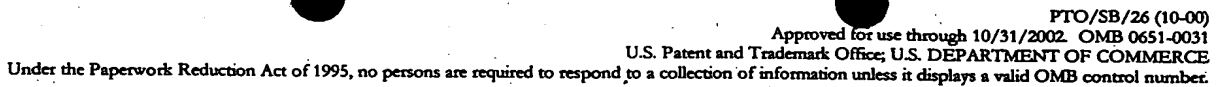
Respectfully submitted,

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RVD/JWM

NVA304680.1

EXHIBIT B

PTO/SB/26 (10-00)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT	Docket Number: 031884-001000

In re Application of:	ZHANG
Application No.:	09/852,033
Filed:	May 10, 2001
For:	*MAGNETIC RESONANCE IMAGING SEQUENCE DESIGNER*

The owner, **Fonar Corporation**, of **100** percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. **6,801,037**. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2, if appropriate.

1. ☐ For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record.

_____ September 20, 2005
Signature   Date

Raymond Van Dyke, Reg. No. 34,746
Typed Name

☒ The Commissioner is hereby authorized to charge any Terminal Disclaimer fee required under 37 CFR 1.20(d) or credit any overpayments to Deposit Account No. 19-2380 (031884-001000) for the above identified docket number.

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☒ transmitted by facsimile on the date shown below to the Commissioner for Patents in the United States Patent and Trademark Office at (571) 273-8300.

/Michael J. Oles/   September 20, 2005
Signature   **Date**

Michael J. Oles
Typed Name

W676419.1